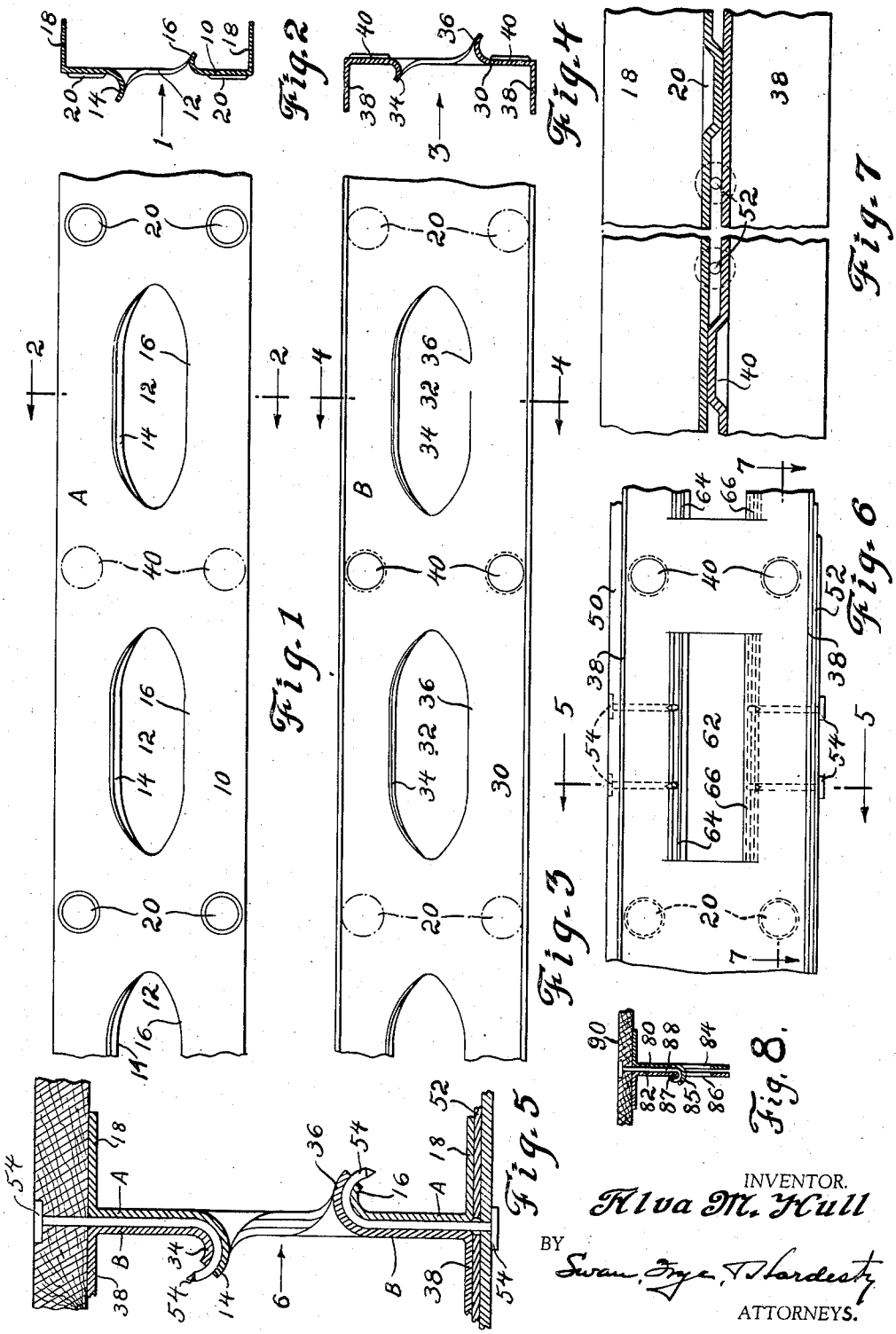
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STRUCTURAL ELEMENT

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STRUCTURAL ELEMENT

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This invention relates to structural elements, particularly adapted to be used in buildings and the like.

An object of this invention is a structural element including a plurality of channels, angles, or other members disposed with their webs in juxtaposed relation, one or more of the webs having tongues bent, curled, or otherwise deformed therefrom to form holding means for the members and for fasteners adapted to be driven into the space between the webs.

A further object is a structural element having a plurality of apertures in the webs thereof through which electric conduits or the like may be passed, the edges of one or more of the apertures being bent, curled, or otherwise deformed from the sheet of the webs to form nail holding means.

Still further objects will readily occur to those skilled in the art upon reference to the following description and the accompanying drawing in which—

Figure 1 is a view of a member as if in the direction of the arrow 1 of Figure 2.

Figure 2 is a section as if on line 2—2 of Figure 1.

Figure 3 is a view like that of Figure 1 of a second one of the members and is taken on the arrow 3 of Figure 4.

Figure 4 is a section on line 4—4 of Figure 3.

Figure 5 is an enlarged section of the element showing it in use and is like a view taken on the line 5—5 of Figure 6.

Figure 6 is a view of a modified form of element in use.

Figure 7 is an enlarged section view as if on the line 7—7 of Figure 6.

Figure 8 is a section view showing a further modified form.

Referring to the drawing:

It will be seen that the preferred embodiment of the structural element includes two channel like members, one of which A is shown in Figures 1 and 2, and the other of which (B) is shown in Figures 3 and 4.

The member A of Figures 1 and 2 includes a web 10 having a plurality of elongated apertures 12 spaced longitudinally along the web. The edges of the apertures are bent, curled, or otherwise deformed as at 14 and 16 to form tongues for purposes to be described, the edges 14 being bent away from the flanges 18 of the channel, and the edges 16 being bent towards the flanges 18. Further, spaced longitudinally along the member are raised blisters or dimples 20 projecting from the sheet of the web away from the flanges 18, also for purposes hereinafter specified.

The member B of Figures 3 and 4 has a web 30 provided with apertures 32 adapted to be aligned with the apertures 12 on the member Figures 1 and 2. The edges of the apertures 32 are bent or curled as at 34 and 36 to form tongues, the edges 34 being curled towards the flanges 38 and the edges 36 being bent away from the flanges 38. Further, spaced longitudinally along the member are raised blisters or dimples 40 projecting from the sheet of the web away from the flanges 18, for purposes to be specified.

When the two members are combined to form a structural element they are disposed in back to back or juxtaposed relation so that the bent edges or tongues 34 and 35 will overlap the bent edges or tongues 14 and 16, this construction being best shown in Figure 5. The dimples or blisters 20 and 40, spaced as indicated, serve to space the webs from each other, providing a narrow space between them as well as between the bent or curled edges of the apertures.

When the element is to be used in a building structure, as for instance, in conjunction with a nail penetratable member such as sheathing wall board or the like and/or metal plates 52, these may be secured to the element by nails 34 driven through the support 30 and plates 52 and into the space between the juxtaposed edges or tongues 14—34 and 16—36. The pointed ends of the nails will curl and conform with the edges 14—34, and 16—36, and will interlock with the webs, as can be readily seen.

In the construction of Figures 1–5, the apertures 12 and 32 are more or less elliptical and the ends of the edges or tonges 14 and 34 come very close to those at 16 and 36. This construction, while a bit more expensive to form, is more satisfactory than the construction of Figure 6, wherein the apertures 62 are rectangular, the ends of the edges or tongues 64 and 66, being spaced from one another. In other respects, the form of Figure 6 is like that of Figures 1–5.

From Figure 6 it will be seen that the blisters 20 and 40 are so spaced along the members that a blister 20 will not engage any of the blisters 40, and vice versa. This feature is also disclosed by the diagrammatic representations of blisters 40 on Figure 1, and 20 on Figure 3, and in Figure 7, which shows a blister 40 on member B engaging the web of the member A and a blister 20 on the member A engaging the web of member B.

Further, this figure also shows how the shanks of the nails 54 are disposed in the space between the tongues or edges of the web apertures.

In Figure 8 there is shown a rafter made up of two angles 80 and 82 with their webs in spaced, juxtaposed disposition. The webs are apertured as at 84 and 86, and the edge 85 of the aperture 84 is curled or bent around the unbent or uncurled edge 87 of the aperture 86. A nail 88, driven through the nail penetratable member 90, is curled at its free end, by the curled edge 85 so as to hook around the edge 87, the construction thus shown being less efficient but similar to that of the other figures.

Further, while Figures 1–7 show an I-beam made up of channels, it will be understood that the inventive ideas shown may be used on T-beams or rafters, made up of angles, without difficulty.

While in the figures the edges or tongues which secure the nails in place are disclosed as being the edges of large apertures 12, 32 and 62, it will be understood that small tongues cut from the webs and curled or bent outwardly, may be used with a similar result. It will be understood that the terms "tongues" and "edges" as used in the claims are interchangeable and that large apertures 12 and 32 are shown only for the purpose of disclosing the fact that these apertures provide spaces through which electric conduits or the like may be passed through the webs.

Now having described the invention and the preferred embodiment thereof, it is to be understood that the said invention is to be limited, not to the specific details herein set forth, but only by the scope of the claims which follow.

What I claim is:

1. A structural element comprising a plurality of members disposed in web-juxtaposed relation, the web of one of said members having a tongue cut and deformed therefrom, the web of the other of said members also having a tongue deformed therefrom and projecting through the aperture in the other web left by the cutting of the tongue in the latter, and curved around and in juxtaposition with but spaced from the last mentioned tongue, all of the tongues being unsevered from the webs at their ends, the marginal lines of the bent tongues being curved.

2. A structural element comprising a plurality of members disposed in web-juxtaposed relation, the web of one of said members having tongues cut and deformed therefrom, the web of the other of said members also having tongues deformed therefrom and projecting through the apertures in the other web left by the cutting of the tongues in the latter, and curved around and in juxtaposition with but spaced from the last mentioned tongues, all of the tongues being unsevered from the webs at their ends, the marginal lines of the bent tongues being curved.

3. A structural element comprising a plurality of wide web members disposed in web juxtaposed relation, the web of one of said members having tongues cut and deformed therefrom, the web of the other of said members also having tongues deformed therefrom and projecting through the apertures in the other web left by the cutting of the tongues in the latter, and deformed around and in juxtaposition with the last mentioned tongues, the webs and the tongues being spaced from each other a relatively small distance where the tongues are formed, substantially equal to the diameter of nails driven into, but not through, the element, the web widths being considerably greater than the shank lengths of the nails, and being secured to each other at points between the tongues by means which relatively space the webs, all of the tongues being unsevered from the webs at their ends, the marginal lines of the bent tongues being curved.

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